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In re Patent Application of:
RUAT ET AL.
Serial No. **10/824,932**
Filing Date: **April 15, 2004**

REMARKS

Applicants would like to thank the Examiner for the thorough examination of the present application. The independent claims have been amended to more clearly define the present invention over the cited prior art references.

In particular, independent Claims 1, 10 and 18 have been amended to include the subject matter from their respective dependent Claims 7, 16 and 24. These dependent claims have now been cancelled. The claim amendments and arguments supporting patentability of the claims are provided below.

I. The Amended Claims

The present invention, as recited in amended independent Claim 1, for example, is directed to an asynchronous frame receiver comprising an input for receiving asynchronous frames comprising standard characters, and a header comprising a break character with a data bit length greater than a data bit length of the standard characters. A first state machine is configured as a break character detection unit for detecting the break character, and a second state machine is configured as a standard character processing unit for detecting the standard characters. The standard character processing unit is activated by the break character detection unit based upon the break character being detected.

An advantage of the claimed invention is that the first and second state machines may be used to provide two operating modes in an asynchronous frame receiver. For example, the first operating mode may be a conventional operating mode in which only

the second state machine is active. The second operating mode may be an operating mode dedicated to protocols of the LIN type, providing a break character BRK in a frame beginning. In the second operating mode, both state machines may be used in which the first state machine activates the second state machine after a character BRK has been detected.

Independent Claim 10 has been amended similar to amended independent Claim 1, and is directed to a microcontroller comprising a universal asynchronous receiver transceiver (UART).

Independent Claim 18 has been amended similar to amended independent Claim 1, and is directed to method for processing asynchronous frames in an asynchronous frame receiver.

II. The Claims Are Patentable

The Examiner rejected independent Claims 1, 10 and 18 over the Gulick et al. patent in view of the Applicants' Admitted Prior Art, and further in view of the Sexton et al. patent. Since the independent claims have been amended to include the subject matter from dependent Claims 7, 16 and 24, the rejection will also be discussed in view of the Wegner et al. patent.

The Examiner cited Gulick et al. as disclosing an asynchronous frame receiver comprising a break character detection unit **412** (FIG. 21) for detecting the break character. The Examiner has taken the position that Gulick et al. also discloses a standard character processing unit for detecting standard characters.

As correctly noted by the Examiner, Gulick et al. fails to disclose an input for receiving asynchronous frames comprising

standard characters, and a header comprising a break character with a data bit length greater than a data bit length of the standard characters. The Examiner referenced paragraph 5 and FIG. 1 in the specification (Applicants' Admitted Prior Art) as disclosing a header comprising break and standard characters.

The Examiner cited Sexton et al. as disclosing a header comprising a break character with a data bit length greater than a data bit length of the standard characters (column 3, lines 27-31). The Examiner correctly noted that Gulick et al. fails to disclose a break character detection unit comprising a first state machine, and wherein the standard character processing unit comprises a second state machine. The Examiner further cited the Wegner et al. patent as disclosing separate state machines.

The Applicants submit that even if the references were selectively combined as suggested by the Examiner, the claimed invention is still not produced. The references selectively combined by the Examiner fail to disclose a second state machine configured as a standard character processing unit for detecting the standard characters and being activated by a first state machine configured as a break character detection unit based upon the break character being detected.

The Examiner cited the Wegner et al. patent as disclosing separate state machines. In FIG. 8a, the Examiner characterized state machine 807 as being the first state machine configured as a break character detection unit for detecting the break character, and state machine 812 as the second state machine configured as a standard character processing unit for detecting the standard characters. FIG. 8a illustrates a logic

circuit for software control. Reference is directed to column 9, lines 20-33 of Wegner et al., which provides:

> "A state machine 807, which is sequenced by the timing in receiver 803, determines whether the data parallel bus 851 should be loaded into receive FIFO 809. State machine 807 determines, in accordance with the selected flow control condition specified in EFR bits 0-3, whether a flow control sequence is received. If state machine 807 determines that a flow control sequence is received, the start/stop signal on lead 811 is accordingly asserted or deasserted to indicate whether transmission should be halted or resumed. If a flow control sequence is not received, state machine 807 asserts the control signal on lead 808 to load into receive FIFO 809 the data on parallel bus 853, which is the output data of temporary storage register 824."

Reference is further directed to column 9, lines 20-33 of Wegner et al., which provides:

> "The start/stop transmitter control signal on lead 811 is provided to a second state machine 812, which controls and sequences transmitter 814. In addition, control signals on leads 801 are also received into state machine 812. The control signals on leads 810 indicate whether receive FIFO 809 contains a number of received characters exceeding a first predetermined trigger level (XOFF condition), or receive FIFO 809 contains a number of received character less than a second predetermined trigger level (XON condition). In accordance with the states of

> either control signals (i.e. control signals on leads 810 and 811), state machine 812, in accordance with the flow control condition specified by EFR bits 2 and 3, insert the appropriate flow control sequence into data stream transmitted by transmitter 820. Insertion of the appropriate flow control sequence, or selection of normal transmit data is accomplished by setting the control signals on leads 815 to multiplexer 816, which receives as input the transmit character from transmit FIFO 818 on parallel bus 852, and the user-programmable flow control characters XOFF1, XOFF2, XON1, and XON2 on leads 817a-817d, respectively. Transmitter 820 is controlled and sequenced by state machine 812 via control leads 814." (Emphasis added).

As noted above, the state machine 807 determines that if a flow control sequence is received, then a start/stop signal on lead 811 is asserted or deasserted to indicate whether transmission should be halted or resumed. Wegner et al. fails to teach or suggest that the state machine 807 detects break characters, wherein frames comprising standard characters and a header are received (with the header comprising a break character).

The state machine 807 provides a start/stop transmitter control signal 811 to state machine 812, which in turn controls and sequences transmitter 820. Wegner et al. thus fails to teach or suggest that the second state machine 812 is activated by the first state machine 807 based on a break character being detected.

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Accordingly, it is submitted that amended independent Claim 1 is patentable over the Gulick et al. patent in view of the Applicants' Admitted Prior Art, and further in view of the Sexton et al. patent. Amended independent Claims 10 and 18 are similar to amended independent Claim 1. Therefore, it is submitted that these claims are also patentable over the Gulick et al. patent in view of the Applicants' Admitted Prior Art, and further in view of the Sexton et al. patent.

In view of the patentability of amended independent Claims 1, 10 and 18, it is submitted that the dependent claims, which include yet further distinguishing features of the invention are also patentable. These dependent claims need no further discussion herein.

III. CONCLUSION

In view of the amendments to the claims and the arguments provided herein, it is submitted that all the claims are patentable. Accordingly, a Notice of Allowance is requested in due course. Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE TRANSMISSION

I HEREBY CERTIFY that the foregoing correspondence has been forwarded via facsimile number 571-273-8300 to the Commissioner for Patents on this 16 day of August, 2007.